



Personal H₂S Monitor

User Training

Richmond Refinery





Objectives

After completing this training, you should be able to:

- Understand Richmond Refinery's Personal H₂S Monitor Policy requirements
- Understand when and how to wear your personal hydrogen sulfide (H₂S) monitor
- Understand what to do if your personal H₂S monitor alarms
- Understand how to perform a self test on your personal H₂S monitor
- Understand how to perform a bump test on your personal H₂S monitor

Refining Tenets to Support the Use of Personal H₂S Monitors



Tenet #4: **Always follow all safe work practices/procedures and act to stop unsafe conditions and actions.**

Intent: Each employee is expected to identify and correct unsafe conditions/actions immediately; **“wear all required PPE”**

Tenet #10: **Always involve people with expertise and first hand knowledge in decisions, improvements, and changes that affect procedures and equipment.**

Intent: Decisions are made with knowledgeable people and the most current/accurate data and information. When responding follow all refinery instructions and...

Remember there is always time to do it right and we will do it safely or not at all.

Richmond Refinery

Personal H₂S Monitor Policy



- We are making changes to our policy to provide a greater level of warning to our workforce
- Richmond Refinery's policy will be consistent with Global Refining's Personal H₂S Monitor Policy issued May 21, 2007
- This policy requires the use of personal hydrogen sulfide (H₂S) monitors as part of the personal protective equipment for working in Process Areas and Tank Fields for both Chevron employees and non-Chevron Richmond Refinery personnel

Requirements: Chevron Richmond Refinery Workforce



- A personal H₂S monitor shall be worn by all personnel when entering Process Areas and Tank Fields in accordance with the following implementation schedule:
 - September 30, 2007 for all Chevron Richmond Refinery employees
 - January 1, 2008 for all non-Chevron contracted Richmond Refinery personnel

Requirements: Visitors



- By September 30, 2007, Chevron visitors will be escorted or will wear an H₂S monitor
- By definition, a "visitor" is not at liberty to enter plants without an escort
- The escort will have a monitor and, therefore, the visitor does not need to wear one



Limitations of Personal H₂S Monitors

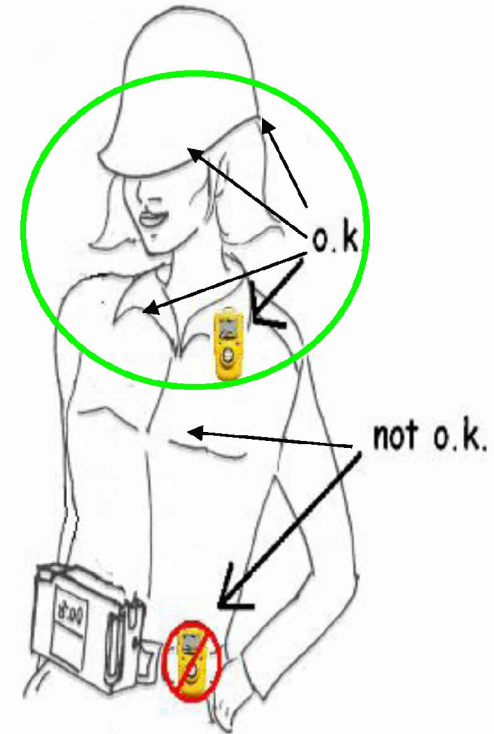
- Personal H₂S monitors are a warning device and do not provide any level of protection
- Personal H₂S monitors are for personal monitoring only, they should never be used as a substitute for plant monitoring or for gas testing before entry

Wear Your Personal H₂S Monitor in the Breathing Zone



The monitor must be worn in the breathing zone (green circle)

- Wear on the outside lapel of a jacket or coveralls (outermost garment)
- Can be attached to the rim/brim of the hard hat
- Make sure the sensor is not covered
- Make sure the sensor grill is free of dirt, debris, and is not obstructed





Personal H₂S Monitor Alarms

- Two alarm setpoints:
 - Low alarm setpoint is 10 ppm
 - High alarm setpoint is 15 ppm

- When H₂S concentrations reach the alarm setpoints the instrument beeps, vibrates, and flashes every second (low alarm) or half-second (high alarm)



Personal H₂S Monitor Alarm Response

When a personal (or area) H₂S monitor alarms, or when you detect an odor of concern, You Must:

- Exit the area immediately
- Move crosswind to a safe location
- Notify your supervisor

If warranted:

- Notify Chevron Fire Department (CFD)

If trained to do so:

- Sound plant alarms
- Establish a Hot Zone
- Before returning, ensure that the area is safe
- Don proper personal protective equipment (PPE)
- Follow the buddy system
- Safely isolate the leak

Richmond Refinery's Personal H₂S Monitor

GasAlertClip Extreme by BW Technologies

- Designed for 2 years of continuous use
- Once turned on, the monitor is always running and cannot be turned off
- H₂S detection range: 0 – 100 ppm
- A self-test is required daily



Activating a New Personal H₂S Monitor

- Open container and remove new monitor
- Press and hold the blue button for 5 seconds to activate
- Monitor will beep, flash, and vibrate
- Monitor will count up to 24 months and display the remaining life of monitor
- The monitor also performs a self-test



Monitor Life-Remaining Clock

- The life-remaining clock on the bottom of the display is the amount of time left in the lifespan of the monitor
- The display shows the countdown of remaining months, then days, and then hours
- The life-end alarm will sound when the life-remaining clock reaches zero
- Expired detectors shall be turned in to your supervisor for proper disposal



Maintenance and Testing of H₂S Monitors

- Perform a self-test daily (beginning of each shift)
- Perform a “bump” test at least quarterly to test the sensor response to H₂S (see slides below for instructions)
- Report damaged, expired or lost monitors to your Supervisor for replacement



Testing:

Performing the H₂S Monitor Self-Test



- Ensure that a self-test has been performed in the last 24 hours by confirming that there is a check mark in the upper left hand corner of the display
- If the word "TEST" is displayed on the upper left corner follow the directions for performing a self-test



Testing: Performing the H₂S Monitor Self-Test



Performing the Self-Test:

- Push the blue button for 5 seconds
- The instrument tests the display, the three alarms, and the sensor and battery integrity
- A check mark (✓) is displayed in the upper left corner when the test is good
- "Test" will again be displayed 20 hours after the last self-test
- A self-test can be performed at any time to ensure that the alarms, sensor, and battery are working



Testing: Performing the H₂S Monitor Bump Test



- Perform the “bump” test:
 - At least quarterly
 - If a monitor is dropped from height
 - If a monitor is exposed to an H₂S level that activates the alarm
- The bump test information is automatically recorded
- Bump test stations will be located throughout the Refinery



H₂S Monitor Bump Test Station



Bump Test Station Locations

- B&S Lab
- EOD Lab
- Hydroprocessing Control Room (west side)
- North Isomax Lab
- COGEN Lab
- Capital Projects "kiosk" (214 Main St.)
- D&R Control Room
- Chevron Fire Department

Bump Test Station Instructions – Step 1

STEP 1:

TURN BUMP TEST
STATION ON.

[Press the button at
the far left below
the screen]



Bump Test Station Instructions – Step 2

STEP 2:

POSITION D-RING
AS SHOWN.

[Position D-Ring so it
is up against the
monitor.]



Bump Test Station Instructions – Step 3

STEP 3:

SQUEEZE CLIPS
INWARD AND LIFT
DOOR TO OPEN.



Bump Test Station Instructions – Step 4

STEP 4:

INSERT THE MONITOR
FACE DOWN.



Bump Test Station Instructions – Step 5

STEP 5:

CLOSE DOOR UNTIL
CLIPS LOCK IN PLACE.

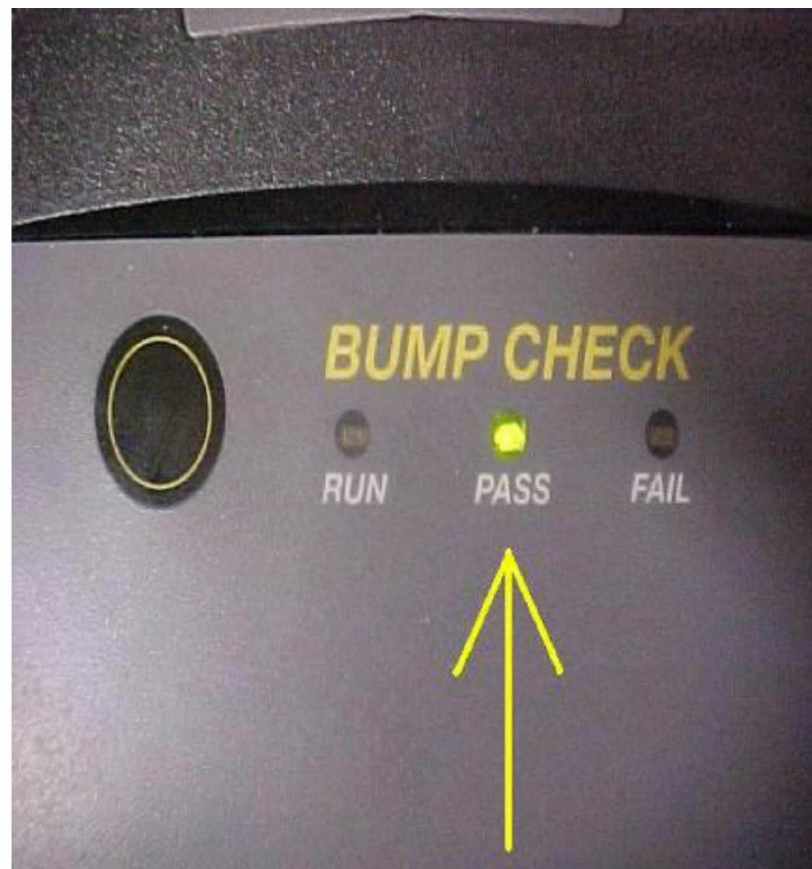
INITIATE BUMP TEST BY
PRESSING THE BUTTON
ON THE BOTTOM RIGHT
(NEXT TO THE WORDS
"BUMP CHECK").



Bump Test Station Instructions – Step 6

STEP 6:

WAIT FOR THE GREEN
“PASS” LIGHT TO
ILLUMINATE.



Bump Test Station Instructions – Step 7

STEP 7:

REMOVE MONITOR AND
CLOSE DOOR.



Final Thoughts

- Wear the H₂S monitor within the Breathing Zone
- User Response To H₂S Alarm:
 - Exit the area immediately
 - Move crosswind to a safe location
 - Notify your supervisor
- False Sense of Security – Do not ignore an odor of concern if the H₂S monitor does not alarm

